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A STUDY ON VISUAL SPATIAL INTELLIGENCE SKILLS AMONG THE SECONDARY SCHOOL STUDENTS

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ABSTRACT

Visual spatial skills are vibrant for success in science. The Visual spatial skills support individuals. The investigator not studied all the types of intelligence studied only visual spatial intelligence only. The normative survey method was employed. Sample for the study is restricted to 300 high school students only. The study was only high school students in Ramanathapuram educational District. Three dimensions of visual spatial intelligence namely mental rotation, mental folding and spatial visualization was studied. The difference between the gender, location of the student, class wise and type of scholar was investigated.

INTRODUCTION:

Visual spatial skills are vital for success in science. Education, experience, and testing surroundings have been shown to develop visual spatial skills and have improved retaining of students. The new part of learning is visual spatial thinking based one. The intelligence based skills was stimulated by powerful information through the different aspects and dimensions. The Visual spatial skills assistance individuals find their positioning in space through captivating in information from the world about them and establishing that visual information to create an considerate of meaningful configurations.

The Cognitive functions are cerebral activities or brain-based skills supported by neuronal networks that allow individuals to carry out simple to complex tasks. Cognitive functions include; perception, attention, memory, motor skills, language, executive functions, and visual-spatial processing.

Visual spatial processing is an individual's ability to process visual stimuli to comprehend spatial relationships between objects and to visualize different scenarios or images. Visual spatial skills help individuals find their orientation in space through taking in information from the world around them and organizing that visual information to create an understanding of meaningful patterns.

NEED FOR THE STUDY:

"Visual spatial skills are essential for success in science, although the extent to which scores on visual spatial tests predict success in engineering is inconsistent in the research. However, education, experience and testing environments have been shown to improve and, in some cases, to eliminate the gender gap in visual spatial skills, as well as to improve retention of engineering students. While intervention strategies aiming to improve visual spatial skills have been shown to benefit both women and men, such strategies are typically not emphasized by women in engineering programs because of the small return on investment exclusively for women."

A person is known by what he thinks feels and what he does. Among the thinking, feeling and doing person's thinking is the major which determines the person's character and personality. Cognition which includes thinking, reasoning, decision-making, memory and problem solving is the key factor for better learning. The better utilization of the cognitive faculty ensures better learning. Knowledge of cognitive style helps a person to know that a person falls in which category and based on this learning styles could be formulated for better comprehension.

Visual Spatial Intelligence Skills:

The visual spatial intelligence skills were different dimensions. The Spatial ability cannot be a unitary construct, but rather a pool of specific skills (Voyer, Voyer, & Bryden, 1995). The researcher chosen only three dimensions of visual spatial skills.

1. **Mental rotation:** The mental rotation involves the ability to rapidly and accurately rotate a two- or three dimensional figures. Tests for mental rotation include the Shepard-Metzler Mental Rotation Test, Flags and Cards, Primary Mental Abilities space, Hidden Patterns, Paper Form Board, Progressive Matrices, and the Vandenberg test.

2. **Spatial perception:** The a person's ability to regulate spatial relationships with respect to the orientation of his or her own body, in spite of diverting information. Tests for this ability comprise the Rod and Frame Test and the water level task.

3. **Spatial visualization:** Its involves complicated, multi-step manipulations of spatially presented information. These tasks require analysis of the relationship between different spatial representations, rather than a matching of those representations. Mental rotation and spatial perception may or may not be elements of the analytic strategy required to complete the task.

Title of the Study:

A Study on Visual Spatial Intelligence Skills Among the Secondary School Students

Operation Key terms:

Visual Spatial Intelligence skills:

The concept that generally denotes to skill in representing, transforming, generating, and recalling symbolic, nonlinguistic info. Spatial ability involves of mental rotation, spatial perception, and spatial visualization.

Secondary School Students:

The investigator means that the students in IX standard. The test constructed and conducted by the investigator.

OBJECTIVES:

1. To find out the difference between in visual spatial intelligence skills and its dimensions of High school students with reference to gender.

2. To find out the difference between in visual spatial intelligence skills and its dimensions of High school students with reference to locality of the school.

3. To find out the difference between in visual spatial intelligence skills and its dimensions of High school students with reference to residence of the students.

4. To find out the difference between in visual spatial intelligence skills and its dimensions of High school students with reference to class of the students.

HYPOTHESIS:

1. There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to gender.

2. There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to locality of the school.

3. There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to residence of the students.

4. There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to class of the students.

Delimitations of the Study:

(i) The investigator not studied all the types of intelligence studied only visual spatial intelligence only.

(ii) Sample for the study is limited to 300 high school students only.

(iii) The study is limited to only high school students in Ramanathapuram Dis-

trict only.

(iv) The study is limited to three dimensions of visual spatial intelligence namely mental rotation, mental folding and spatial visualization.

TESTING OF HYPOTHESES:

Null Hypothesis 1

There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to gender.

Table 1: Difference between Male and Female Students in their Visual Spatial Intelligence Skills

Dimensions of visual spatial intelligence skills	Male (No. 174)		Female (No. 126)		Calculated 't' Value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Mental Rotation	19.46	3.21	19.76	3.05	0.82	Not Significant
Mental Folding	20.66	3.27	21.27	3.18	1.61	Not Significant
Spatial Visualization	20.13	3.28	19.98	2.98	0.42	Not Significant

(The table value of 't' at 5% level of significance is 1.96)

Since the calculated value of 't' (1.27) is less than the table value (1.96) at 5% level, the hypothesis is accepted. Hence there is no significant difference between male and female students in their visual spatial intelligence skills in total.

Null Hypothesis 2

There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to locality of the school.

Table 2: Difference between Urban and Rural Students in their Visual Spatial Intelligence Skills

Dimensions of visual spatial intelligence skills	Urban (No. 200)		Rural (No. 100)		Calculated 't' Value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Mental Rotation	20.39	3.11	17.98	2.54	6.7	Significant
Mental Folding	21.22	3.32	20.32	3	2.27	Significant
Spatial Visualization	19.85	3.28	20.51	2.87	1.72	Not Significant

(The table value of 't' at 5% level of significance is 1.96)

Since the calculated value of 't' (5.57) is greater than the table value (1.96) at 5% level, the hypothesis is rejected. Hence there is significant difference between urban and rural students in their Scientific Attitude in total.

Null Hypothesis 3

There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to residence of the students.

Table 3: Difference between Day-scholar and Hostel Students in their Visual Spatial Intelligence Skills

Dimensions of visual spatial intelligence skills	Day-scholar (No. 200)		Hosteller (No. 100)		Calculated 't' Value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Mental Rotation	19.71	3.4	19.34	2.56	0.96	Not Significant
Mental Folding	21.11	3.17	20.53	3.53	1.46	Not Significant
Spatial Visualization	20.43	3.21	19.35	2.93	2.81	Significant

(The table value of 't' at 5% level of significance is 1.96)

Since the calculated value of 't' (1.59) is less than the table value (1.96) at 5% level, the hypothesis is accepted. Hence there is no significant difference between day-scholar and hostel students in their Scientific Attitude in total.

Null Hypothesis 4

There is no significant difference between in visual spatial intelligence skills and its dimensions of High school students with reference to class of the students.

Table 4: Difference between 9th and 10th Standard Students in their Visual Spatial Intelligence Skills

Dimensions of visual spatial intelligence skills	9th (No. 220)		10th (No. 80)		Calculated 't' Value	Remarks at 5% level
	Mean	S.D	Mean	S.D		
Mental Rotation	19.74	3.14	19.05	3.11	1.68	Not Significant
Mental folding	21.02	3.18	20.54	3.41	1.14	Not Significant
Spatial Visualization	20.20	3.28	19.64	2.78	1.35	Not Significant

(The table value of 't' at 5% level of significance is 1.96)

Since the calculated value of 't' (2.9) is greater than the table value (1.96) at 5% level, the hypothesis is rejected. Hence there is significant difference between 9th and 10th students in their visual spatial intelligence skills in total.

RECOMMENDATIONS:

From the analysis of present study and on reviewing the related studies conducted in India and abroad, the investigator identified that the educational planners, administrators and teachers have not recognized the need of visual spatial intelligence of students. In the light of above mentioned observations, the investigator has the following recommendations.

1. Adopt strategies for developing Visual Spatial intelligence for primary education.
2. Visual Spatial intelligence should be developed among the teachers.
3. Strategies for inculcating Visual Spatial intelligence skills should be included in the school curriculum.
4. Students can be encouraged for group learning.
5. Innovative modern teaching strategies should be incorporated to develop Visual Spatial intelligence skills.

SUGGESTIONS FOR FURTHER RESEARCH:

The following are the suggestions for further study,

1. A study on Visual Spatial intelligence of educational administrators.
2. Scientific attitude and Visual Spatial intelligence skills -A correlational study.
3. A study of Visual Spatial intelligence of gifted students.
4. Relationship between Visual Spatial intelligence and emotional intelligence of students.
5. This study can be extended to college students.

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